Supplemental Information Report

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American River Watershed Project, California

Part I Main Report
Part II Final Supplemental Environmental Impact Statement / Environmental Impact Report

US Army Corps
of Engineers
Sacramento District

The Reclamation Board
State of California

SAFCA

Sacramento Area
Flood Control Agency

CHAPTER IV

PLAN FORMULATION

This chapter summarizes the process and results of formulating flood protection alternatives for Sacramento. The flood damage reduction measures evaluated and flood protection alternatives developed from those measures are described in detail in Appendix D, Plan Formulation. Specific information on designs and cost estimates is contained in Appendix E, Engineering Appendix, and in Appendix F, Real Estate.

PLAN FORMULATION PROCESS

The plan formulation process consists of these basic tasks:

- Establish specific objectives for implementing a plan to resolve the identified flood problems and, as possible, related water resources needs.
- Define constraints and criteria for formulating an implementable plan.
- Identify, document, and evaluate flood damage reduction and related measures to address the planning objectives.
- From the most workable measures, assemble, display, and evaluate an array of alternatives, consistent with planning constraints and criteria, to address the study objectives.
- Compare and evaluate the alternatives and select and display a plan for recommended implementation.

PLANNING OBJECTIVES

A serious flood problem exists in the Sacramento area. There is also the need for increased incidental recreation, water supply, hydropower, and fish and wildlife habitat in the study area. Based on these problems, needs, and opportunities, the following planning objectives were developed and used in the formulation of flood protection alternatives.

channel about 8 miles long from Folsom's outlet works to the detention dam on Deer Creek; (3) a flood detention basin on Deer Creek upstream from the confluence with Cosumnes River with a capacity of up to about 600,000 acre-feet; and (4) channel modifications along lower Deer Creek, Cosumnes River, and the Delta to contain flood releases from the dam.

Several combinations of increased storage space in Folsom Reservoir, modifications to Folsom's outlets, and sizes of detention facilities on Deer Creek were considered. Offstream storage on Deer Creek would provide a 200-year level of protection—but at roughly three times the cost of new storage on the American River. Principal problems with this measure are the high costs associated with a large-capacity diversion channel built through a quickly developing area, which would result in adverse environmental and related impacts and affect significant existing residential and commercial development and new development expected in the basin area. In addition, diversion of floodwaters from the American River to the Cosumnes would create high flows on the Cosumnes River and induce flooding in south Sacramento and San Joaquin Counties, some of which might not be possible to mitigate.

Raise Folsom Dam and Spillway. Folsom's flood control storage space could be increased by increasing the space above the reservoir's gross pool (elevation 466 feet). Folsom Dam would have to be raised, about 5 miles of wing dams and supplemental dams and dikes that fill in low spots around the reservoir perimeter would have to be raised and extended, and the spillway gates would need to be replaced with gates 65 feet high.

Two dam raises were analyzed—30 feet, a maximum, and 17 feet, the minimum needed to control the probable maximum floodflow. The 30-foot raise would increase storage by about 366,000 acre-feet and the 17-foot raise by about 200,000 acre-feet. The additional space would be dedicated exclusively to flood control and would be used infrequently; for example, up to 7 days during a flood caused by a 50-year or larger storm.

Preliminary studies showed this measure was not cost effective. The cost would be greater than for other storage measures that could provide similar increases in flood protection level.

Excavate Folsom Lakebed. Excavation of the Folsom Reservoir lakebed would provide additional storage, but it would be prohibitively expensive for a small increase in flood protection. The space below the spillway is very inefficient for flood control, and even an additional 100,000 acre-feet of space would provide a very limited increase in flood protection.

Nonstructural. Nonstructural measures were considered in accordance with Corps regulations. However, because of the large flood plain; deep flooding in much of the flood plain; and large numbers of residential, commercial, industrial, and institutional structures in the flood plain, raising structures or removing them from the flood plain would not be economically feasible. Similarly, flood-proofing measures such as constructing small walls or levees around structures would not be economically, socially, or environmentally feasible.